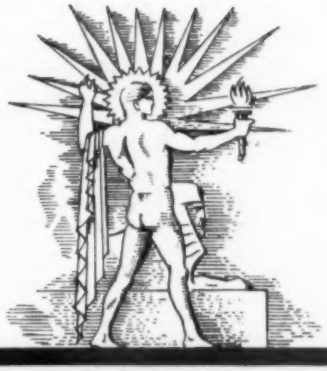
SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE •



November 5, 1938

For Happy Landing

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A SCIENCE SERVICE PUBLICATION

Do You Know?

The visible smoke from one cigarette weighs .0031 ounces.

The Soviet Academy of Sciences is to issue a reference book describing all its expeditions since 1717.

An unusual old Athenian cup acquired by the Metropolitan Museum of Art is shaped like a cow's hoof.

A factory once operated inside Napu Crater in Hawaii, to turn the silky floss of native ferns into pillow stuffing.

According to old legend, the Pekinese dog is the result of a romance 10,000 years ago between a lion and a squirrel.

Nearly a thousand native Texas plants have been collected to form a herbarium in the proposed Big Bend National Park.

The Chinese have found one more use for bamboo—it is being used in trellises to ward off splinters from air-raid bombs.

Shade trees planted properly in cities can reduce the number of sunstroke cases in summer, says a New Orleans park commissioner.

Two great trumpets of the Bronze Age were brought out of a showcase in Denmark's National Museum and played by modern musicians recently, as a feature of an international meeting of archaeologists in Copenhagen.

QUESTIONS DISCUSSED IN THIS ISSUE

Most articles which appear in SCIENCE NEWS LETTER *are based on communications to Science Service, or on papers before meetings. Where published sources are used they are referred to in the article.*

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PUBLIC HEALTH—GENERAL SCIENCE

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SURGERY

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A mild and painless iodine antiseptic has been developed.

Sparrow hawks might better be called grasshopper hawks judging by their favorite food.

Houses with two stories underground have been found in ancient ruined villages of Peru.

Benjamin Franklin once launched a traveling show on science: he sent out a man to demonstrate electrical discoveries in the colonies.

Greenland has 17,000 people, and 16,000 of them live on the west coast.

X-ray photographs an inch square are being taken in Germany at a considerable saving of film.

Mass production of telephones is to be tried in a Calcutta shop to bring Indian telephones up-to-date.

City smoke may slow down growth of plants: the soot coats the leaves, interfering with their absorption of carbon dioxide and keeping off sunlight.

SCIENCE NEWS LETTER

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MEDICINE

Local Anesthetic Treatment Helps Arthritis Sufferers

Not a Cure, But It Gives More Than Temporary Relief And Enables Patients to Regain Use of Crippled Parts

CRIPPLED, pain-racked arthritis sufferers may be freed of pain and helped to return to work and normal lives with the aid of local anesthetics, Dr. Otto Steinbrocker of Bellevue Hospital, New York, reported to the Congress of Anesthetists.

The treatment consists of injections of procaine, local pain-relieving agent akin to cocaine. The procaine is used in an oily solution, which makes the effect last longer. It is injected either into the painful areas or into the nerves alongside of the spine, which supply the painful joints.

The treatment is not a cure for arthritis, Dr. Steinbrocker emphasized, because it does not reach the underlying cause of the arthritis. It is palliative treatment, but the relief from pain is more than temporary and because the patient is free of pain, he is able, by massage and graded exercise, to get back the use of his hands, legs or other affected parts.

If the treatment is started early, deformities can be prevented, Dr. Steinbrocker said, because these deformities are largely due to contraction of muscles to prevent pain on motion.

Dr. Steinbrocker has used the method to treat 134 patients but has only been able to trace 19 of these for learning final results. Of these, 17 were adequately or completely relieved from four months to two and one-half years after treatment.

The treatment is especially useful for acute conditions such as sprains. It shortens the time the patient must be laid up after a sprained ankle, for instance, by about two-thirds.

JAPANESE BUILD CYCLOTRON

Here are Japanese scientists with one of the tanks in which will be immersed the 24-ton coils of the cyclotron they are building at the Institute for Physical Research in Tokyo. Dr. Yoshio Nishina, in charge of the erection of the huge atom smasher, which will be a duplicate of the one now under construction at the University of California, had the assistance of Prof. E. O. Lawrence, inventor of the cyclotron, who is at the University of California.

Surgeons Attack Epilepsy

Cure of epilepsy by surgical operation on the brain was reported to the American College of Surgeons by Dr. E. Jefferson Browder of the Brooklyn, N. Y., Hospital. Sixteen out of 40 patients were cured by this operation which Dr. Browder demonstrated. Another 12 were improved, and 12 were unimproved.

The figures may not sound impressive but surgeons pointed out that surgeons have never been able to do anything for epilepsy in the past and that consequently this work and similar work by a few other surgeons elsewhere is a new and promising approach to the age-old problem of this ailment.

The operation is performed only on patients between 18 and 45 years of age and on those in this age group whose fits show some starting point such as movement of a thumb or hand. This starting point gives the surgeon an idea of which part of the brain may be diseased and causing epileptic fits. The exact area is determined by the patient's response to an electric current passed into the brain along a fine wire probe. Then an inch or two of brain in this region is cut out.

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BOTANY

Green "Scum" Has Value As Aquatic Source of Food

MOST of us, even though we may claim no great degree of botanical knowledge, can recognize the lesser plants, fungi and mosses, when we see them. But mention algae, another great group of the humbler, flowerless growths, and we feel a bit lost. We aren't quite sure what algae are.

To bring popular knowledge of this important but neglected province of the plant kingdom up even with that of plants in general is the task which Prof. L. H. Tiffany of the University of Illinois has set for himself in his new book, *Algae: the Grass of Many Waters* (Thomas).

Algae aren't grasses, in the strict botanical sense of the term, the author points out. They rank far below grasses in the hierarchy of systematic botany, indeed sharing with fungi the lowest rung of the evolutionary ladder. Yet styling them "grass" is justified from the ecological point of view, because of their function in the life-complex of the waters. If it is true on land that all flesh is grass, it is equally true in the water that all fish is alga.

Algae form the fundamental food in

the long chain of eat-and-be-eaten that begins with almost invisible gnawers like minute worms and water-fleas and builds up at last into salmon and sturgeon, walrus and mighty whale. Most of us know algae mainly as the highly unappetizing green scums that form on stagnant ponds; we do not recognize in them the fish-fodder that eventually turns up on our tables after many digestive metamorphoses.

But algae aren't just fish provender. They come to our notice, and affect our lives, in a score of other ways. They form green mats and scums on the soil, and apparently cooperate with bacteria in fixing atmospheric nitrogen as free fertilizer. They form the green "moss" supposed to grow only on the north sides of trees. (Actually it grows on any damp side of the trunk). Fossil beds of their silica shells provide scouring powder. Algae have even been found inhabiting our own important interiors.

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PHARMACY

League of Nations Sets Standards for Drugs

THE LEAGUE of Nations may not be able to stem the "rule of might" disease that is creeping over the world, but it continues to have scientific appendages that play important roles in the lives of the peoples of various nations.

Antitoxins, sera, drugs, vitamins and sex hormones, about 30 useful substances the activity of which can be measured only through use of laboratory animals, are standardized through international action fostered by the League of Nations Organization.

Curiously enough, it was war-time experience that played a leading role in convincing that national standards are not enough.

"Many deaths could have been averted," an official report says, "if the sera used during the war had been assayed in relation to a single standard. Doctors would not have been betrayed by the unitage given on foreign ampoules into injecting quantities of serum which they had good reason to regard as sufficient, but which were in fact inadequate, since the assay had been effected in terms of a unit of lesser potency than that to which they were accustomed."

Because drugs and biological products are exported and imported in peace times as well, it would be easier for manufacturers and safer for physicians and patients if uniform, international standards were used. And without standardization, how can therapeutic results on two sides of a frontier be compared?

It is not surprising that as early as 1921 the League's Health Committee called an international conference on this problem. Keeping pace with scientific progress, the sex hormones are the latest class of substances for which standards are set. Written standards are not enough; national laboratories in Copenhagen and London keep and distribute international standard preparations on behalf of the League Health Organization.

Diphtheria, tetanus, staphylococcus, and gas-gangrene antitoxins, anti-dysentery and anti-pneumococcus sera, insulin, pituitary extract, vitamins A, B_1, C and D, digitalis, salvarsan, neosalvarsan, and sulfarsphenamine are among the substances standardized.

Science News Letter, November 5, 1938

GENERAL SCIENCE

Eye Is Electric Generator, Current Tiny But Measurable

National Academy of Sciences, at University of North Carolina, Hears Reports From Many Fields of Research

"ELECTRIC glances," favorite phrase of old-time romantic novelists, is closer to literal fact than they ever guessed. For the human eye is an actual electrical generator, Prof. Walter R. Miles of Yale Medical School told the National Academy of Sciences, at the opening of their autumn meeting on the campus of the University of North Carolina.

The front part of the eye, Prof. Miles said, is electrically positive and the back part, where the retina is, has the opposite or negative charge. These differences in potential can be detected and measured by sticking thin pieces of metal foil on the skin at either side of the eye and attaching the wires to sufficiently delicate voltmeters. When the eye is held still, the instrument indicates steady voltage. As soon as you turn or roll your eye, you bring differently charged areas under the little electrodes, and the changes in the current show themselves on the dial.

Differences in potential, measured during a wide turning of the eyeball, range from .0002 to .003 volt for each eye. The amount of light falling on the eye at the time of measurement makes only a small difference in the result. One eye may differ markedly from its mate, just as people differ among themselves. Minor visual defects seem to make little difference.

That the eyeball itself, and not the surrounding muscle, is the source of the current was demonstrated when the tests were checked on persons who had lost one eye. If the eyeball is not there no current is generated, regardless of whether the socket is left empty or filled with a glass eye.

Cotton Under Microscope

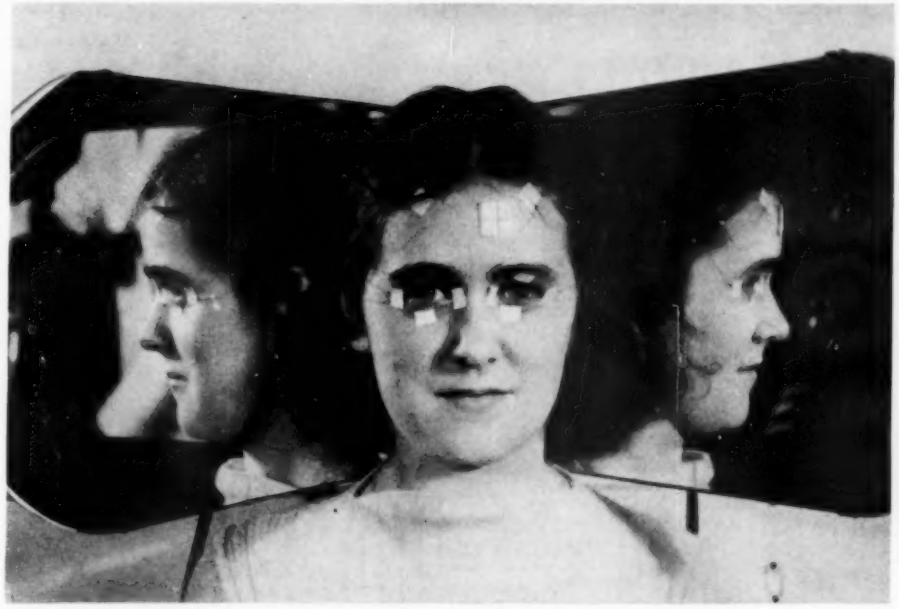
COTTON, on which so much depends in the South and in the nation, was put under the ultra-microscope by Prof. Donald B. Anderson of North Carolina State College. The wall of the cotton fiber, he said, is composed of exceedingly small thread-like strands of cellulose that branch and interlace freely with each other, forming a close-meshed network.

In the oldest layer of the cell wall the cellulose strands lie in flat, close spirals, but in the parts formed later the strands wind in steep spirals. It is possible to control the rate at which the cellulose is laid down by controlling the environment. This may mean eventually a control of the quality and kind of cotton by suitable adjustments of the conditions under which it is grown, especially as regards temperature and light.

Increase Seed Size

DOUBLE the number of chromosomes in the cells of a plant and it will yield bigger seeds and show other changes in the direction of general giantism, Drs. A. F. Blakeslee and H. E. Warmke of the Carnegie Institution of Washington told the meeting. They provoked extra-chromosome plant types into existence by treating the parents with the drug colchicine.

Other effects of extra chromosomes Dr. Blakeslee mentioned were larger



ELECTRICITY IN HER EYES

The beauty patches on this young lady cover electrodes ready to serve in the measurement of the differences in electric potential between the front and the back of her eyes.

dowers, increase in width, thickness, and greenness of leaves, shorter, thicker fruits, and larger stomata or breathing-pores. Together with Prof. E. W. Sinnott of Columbia University, Dr. Blakeslee also found that increase in number of chromosomes in squashes and gourds caused their fruits to become shorter and wider than the parent type.

Barytron Behavior

BARYTRONS, which are sub-atomic particles 200 times as massive as electrons, were pointed out as responsible for sudden bursts or showers of cosmic rays, by Prof. L. W. Nordheim of Duke University. These heavy particles constitute the major part of all cosmic rays at sea level and under ground, but not in the upper atmosphere. Prof. Nordheim suggested that when a barytron passes through matter and collides with electrons that are part of the atoms in it, these electrons are knocked out of their circuits in sudden bursts, at high velocities, thus constituting the "showers."

Find Waltzing Star

A STAR that carries on an unending waltz through space with a dark partner that no one has ever seen was described by Drs. S. A. Mitchell and D. Reuyl of the Leander McCormick Observatory of the University of Virginia. The star is known as Ross 614.

The weaving motion of the star can be traced, the scientists reported, indicating that it is whirling round and round a massive stellar body like itself, as do all the familiar double stars in which both members are bright, but the companion here is invisible.

A somewhat similar case is that of the giant dog star, Sirius, which has a massive companion whose light is exceedingly faint. But this is the first recorded case of a companion star that is totally invisible.

The faint star known to astronomers as Wolf 424, announced a short time ago to be earth's nearest neighbor in space, was "put back in its place" by the two astronomers. They told the Academicians that there are at least thirty stars nearer to the earth than this one.

Poison Brings Immunity

IMMUNITY on the part of the most essential portion of the kidney to the action of one of the most destructive of all known mineral poisons can be developed by subjecting the kidney to the action of an entirely different poison and letting it recover. This strange physiological effect, quite different from the way in which the body becomes immune to bacterial and other organic toxins, was described by Prof. William deB. MacNider of the University of North Carolina.

When the kidney of an animal is slightly injured by uranium nitrate, related Prof. MacNider, the cellular lining of the tubes that carry on the kidney's essential function is replaced by new cells of the original, normal pattern. Such cells are not resistant to a second poisoning with the same chemical compound.

If, however, the first dose of uranium nitrate is heavier, causing more severe injury, the self-repair that follows produces a different kind of lining cell in the tubes. The new cells are flatter in shape; and they are apparently physiologically tougher as well, for they cannot be injured by repeated doses of the uranium salt.

What is more remarkable, however, is the fact that they are also resistant to the action of bichloride of mercury, or corrosive sublimate, which is notorious for its selective and highly destructive effect on these particular cells in their normal state. In other words, the immunity of the repair cells produced by one poison is non-specific, but extends to another (and more severe) kind of poison. Other poisons to which the new cells have been found resistant are chloroform and alcohol.

International Exchange

SCIENCE'S international character is to be stressed through a new exchange of lecturers between the United States and Great Britain, arranged for in London and supported financially by the Pilgrim Trust, which was established by Edward S. Harkness, an American. The new lectureship is to be known as the Pilgrim Trust Lectureship.

In alternate years, noted British men of science, chosen by the Royal Society of London, will come to America to speak on fundamental scientific achievements and problems; and in the intervening years leading American scientists, selected by the National Academy of Sciences, will return these "courtesy visits of learning."

The series will be inaugurated on Dec. 8 of this year, when Dr. Irving Langmuir of the General Electric Company research laboratory will speak in London.

The first English lecture will be presented in Washington during the spring meeting of the National Academy of Sciences, by Sir William Bragg, president of the Royal Society.

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A method of making sugar synthetically from formaldehyde has been patented.

PSYCHOLOGY

Tests Pick Mental Patients Who Will Respond to Insulin

Simple Psychological Measure of Abstract Thinking Proves More Accurate Than Other Methods of Prognosis

SIMPLE psychological tests that will enable physicians to pick out in advance from their mental patients many of the tragic few who cannot respond to the new insulin shock treatment have been found at the New York State Psychiatric Institute.

This announcement, which may in future spare patients and their families unnecessary expense and discomfort as well as the tragedy of hopes raised in vain, was made by Dr. M. Marjorie Bolles, George P. Rosen, and Dr. Carney Landis. (*Psychiatric Quarterly*, October)

Although the tests do not permit perfect prediction of success or failure with the insulin treatment, they do make it possible for the physician to estimate a patient's chances with a very fair degree of accuracy. They are much more accurate than any method of prognosis previously used.

The discoverer of the insulin shock treatment for schizophrenia, Dr. Manfred Sakel, had observed that fairly young persons who had not been ill long would have the best chance for recovery with the new treatment. Experience has shown, however, that both young and old recover and both young and old fail to respond.

In the new experiment here, a man 27 years old who had been mentally deranged for thirteen years, but who made high scores on the tests, got well after the violent shock of the insulin treatment. Yet a young girl of 16 years who had been ill only two years, but who made lower scores, remained unimproved. Unimproved also were two young women who had been ill only one month.

Tests an Index

In general, those patients whose scores on the tests were relatively low did not improve under the treatment; those who did better on the tests than others in the group, showed the most improvement.

The tests used are very easily administered and simply require the patient to sort out certain objects placed before him. Dr. Bolles, working with Dr. K. Goldstein, had previously found that schizophrenic patients differ from normal individuals in their ability to do such sorting. The disease appears to impair a person's ability to form a new concept or to think abstractly in a way required for sorting or organizing facts or objects.

The schizophrenic cannot readily observe the general category to which several articles belong and finds it difficult to shift his thinking from one aspect of a situation to another. The extent of this impairment in abstract thinking has now been found to be related to the chances the patient has for recovery under the insulin treatment.

So far the tests have been given to only 19 patients who later received the insulin treatment. This number is too small, the investigators warn, to permit wide generalization. The results do, however, "indicate that careful psychological testing before and after insulin is scientifically valuable and may contribute information of prognostic significance."

An investigation of a larger number of cases is now being made.

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RADIO

New Ignition Cable Cuts Radio Interference

AN IGNITION cable that cuts the drain on an automobile battery in starting the car by 30 per cent., lowers idling speed, gives higher top speed, longer life for spark plugs and less radio interference has been developed by Dr. Melville A. Peters of the National Bureau of Standards.

The new cable, on the Navy's secret list for three years and used on Naval aircraft, uses seven strands of stainless steel wire instead of many strands of copper wire. Dr. Peters' formula for the new cable was developed mathematically; in technical parlance, it owes its improved features to "low capacitance." It is now available for general auto and aviation use.

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The first metal used in electric lamp filaments was platinum.

NO FORGETTING

Kim Scribner, jumper, does not have to remember to pull his ripcord as he drops through space. The parachute opens automatically. By pulling on "steering shrouds" he can also open and close the flaps at the sides of the chute, enabling him to maneuver more easily.

AERONAUTICS

Self-Opening Parachute Is New Safety Invention

See Front Cover

NO PULLING of ripcord is necessary on a new parachute invented by Richard H. Hart of New Orleans. A pocket does the trick. As the jumper falls, the parachute pack swings up over his head and the air rushing past him catches in the pocket, bellows it out, pulls the ripcord automatically to open the parachute.

The parachute also has flaps on each side which make it much more maneuverable than the ordinary type.

The photograph on the cover of this week's SCIENCE NEWS LETTER is especially posed to show how the new parachute would look as the jumper lands. Wearing it is Kim Scribner.

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China has five times as many people as South America.

ARCHAEOLOGY

Cancel Plans for Unearthing Cities in the Holy Land

Only Oriental Institute Plans to Go On With Program; One Expedition Head Has Been Killed in Disorders

CIVIL war in Palestine has caused cancellation of plans for Holy Land excavation this year by leading American and European archaeologists, Science Service has learned.

Only the University of Chicago's Oriental Institute, among the larger American archaeological institutions, is sticking by its program. The Institute still hopes to dig beside the palace and gate of Megiddo, the Biblical Armageddon.

Although a pitched battle was reported recently at this traditional site of many battles, Dr. John A. Wilson, the Institute's director, said in Chicago, its Megiddo staff is now preparing publications but expects to return to Palestine before the end of the year.

French, German and British scientists, as well as Americans, are all affected by the turmoil in the small country which has so increasingly yielded its buried evidence of the Biblical era. At the Johns Hopkins University in Baltimore, Dr. W. F. Albright, Vice President of the American Schools of Oriental Research, summed up a toll list of important expeditions abandoned or deferred:

The British, he says, are not expected at Lachish, where lately they found important writings on potsherds — actual contemporary evidence for the period of Jeremiah. The director of the Lachish expedition, J. L. Starkey, was killed by armed Arabs in ambush, as he rode from Lachish to Jerusalem, last January. Another director was named, but work has been deferred.

In far southern Palestine, where another British expedition led by H. Dunscombe Colt has unearthed churches containing the first documents on papyrus ever found in Palestine, there will be no continuation of the excavations this autumn.

A German expedition which arrived in Palestine in September expecting to dig at Shechem was unable to start because of armed bands in the district. The archaeologists returned to Germany.

French scientists who have been exploring Ai, which means in Hebrew "the ruin," have been learning more about Joshua's campaigns in that region; but the French have interrupted their digging until times are more favorable.

From Dr. Eliezar L. Sukenik of the Hebrew University in Jerusalem comes word that Jewish archaeological expeditions have suffered as a result of riots. An expedition of Jewish scientists, including members of the Hebrew University, has been making valuable discoveries in Jewish catacombs in Galilee, near Sheikh Abreik, he states. But the uncertain conditions seriously hamper the work.

The American School of Oriental Research in Jerusalem is not even sure whether it can carry out the regular year's work with its students, many of whom take part in excavations in the surrounding country. Prof. Millar Burrows of Yale, President of the several American Schools of Oriental Research, says that plans are going ahead, however, as usual. The director of the school in Jerusalem, Dr. Nelson Glueck, recently reported to Prof. Burrows:

"I guess it is somewhat dangerous in Palestine, but I see no reason to get panicky about it. I can guarantee the members of the school all the archaeological experience they can stand in Transjordan. I hope to continue the excavations at Tell el-Kheleifeh in the spring at the latest and perhaps for a short season in November and December."

Prof. Burrows points out that Dr. Glueck's excavations and important archaeological surveys are across the River Jordan, where the situation is different from that in Western Palestine. Tell el-Kheleifeh, where Dr. Glueck hopes to dig, is the site of King Solomon's seaport at the head of the Red Sea, where last season Dr. Glueck unearthed Solomon's copper smelting and refining plant, and other ruins of the historic port.

Regarding Palestine's archaeological prospects, Prof. Burrows says:

"Certainly there will be at most a great deal less work than there would be under peaceful conditions. When travel is unsafe and it is as difficult, as it is now, to get labor and supplies, very few organizations can be expected to carry on active work."

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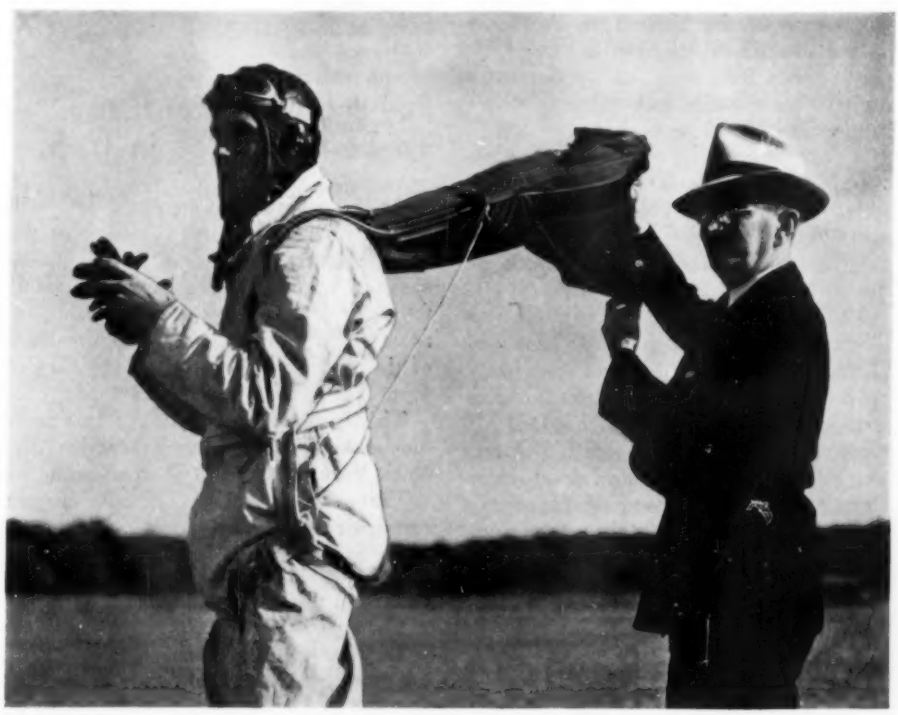

READY FOR USE

Here the self-opening parachute is packed on Kim Scribner's back ready for the jump.

SURGERY

Warns Against Improper Handling of Football Hurts

A WARNING against improper handling of football players injured during a game was issued by Dr. Frederic A. Besley of Waukegan, Ill., before the American College of Surgeons. Dr. Besley is the out-going president of the College.

Broken backs and broken heads—spine and skull fractures in surgical terminology — especially need careful handling and are least apt to get it, Dr. Besley pointed out. The player with either of these injuries may not show at first how seriously he has been hurt. Letting a few other players carry the injured man off the field if his spine is broken is a particularly dangerous practice. If there is any question about the seriousness of the injury, the injured player should be carried off the field in a stretcher.

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ARCHAEOLOGY

Stone Age Gave Mankind Urge To Stone Greatness

ONE OF our curious hand-me-downs from the late Stone Age is a fascination for the tremendous in stone.

During thousands of years of using stone tools, our ancestors must inevitably have become stone-conscious. It would not be surprising that they came to regard anything particularly huge in the boulder line as a marvel and a challenge. But whether they were lured by fear, fascination, or ambition—and it is almost impossible to tell how a Stone Age man actually felt—the urge to battle with stone giants was, and continued to be, almost universal wherever such giants were known.

The passion for dealing with great boulders dates back to the Neolithic, or New Stone Age, when Europeans and other widely scattered groups had enough team spirit or sufficiently strong dictators to engineer a big project. These took the form of giant stone tables constructed over graves. Boulders up to 18 feet long were used.

By 1800 B. C. England's natives were building great stone circles, and some geologists believe that they must have transported some stones all the way from Wales, over 100 miles away, to Stonehenge. These "imported" boulders altogether weighed almost 100 tons.

Meanwhile, Egyptians specializing in obelisks were moving, by sledge and boat, enormous stone needles bashed out of the quarry. Five hundred tons was their best record, though they began work on one much larger. Beside this figure, the building blocks of the Great Pyramid, averaging a mere two and a half tons, seem tiny. But they make up for it in quantity: over two million such blocks in that pyramid alone.

Mayan Indians in American tropics set up towering monoliths, richly carved. Bolivian Indians made a nine-ton monolithic gateway. Easter Island's natives carved more than 600 great stone faces, 20, 30, even 70 feet tall. On the Island of Yap, stone cartwheels too big to move around became money.

And modern America adds its contribution by carving super-heroic sized presidents on a Dakota cliff.

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MEDICINE

Study Electric Properties Of Ragweed Pollen Protein

TINY quartz particles and oil droplets, covered with the protein of ragweed, are riding up and down in apparatus at the laboratory of Dr. Harold A. Abramson, of Columbia University and Mt. Sinai Hospital, to disclose new facts that may lead to improved methods of treating hay fever and to new methods of skin testing.

In a report to the conference on electrophoresis of the New York Academy of Sciences, Dr. Abramson described his new studies in connection with an address on the history and recent advances in electrophoretic methods.

It is the surface properties of the protein in ragweed which are in part responsible for hay fever, Dr. Abramson said. The surface properties, in turn, are determined by the electrical charge on the surface.

Using a method basically similar to that which Prof. Robert A. Millikan employed in measuring the electrical charge on the electron—one of the all-time masterpieces of physical research—Dr. Abramson makes the protein-coated quartz and oil droplets ride up and down in an electric field. The speed of passage is a measure of the electrical surface properties of ragweed protein found in the pollen.

"On the basis of the electrical charge of ragweed, experiments on the application of the electrophoretic method, that is, electrical introduction instead of injection of ragweed into the skin, to hayfever therapy are in progress," Dr. Abramson declared.

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IN SCIENE

PSYCHOLOGY

Pitch of Your Voice Goes Up in Anger or Fear

WHEN you are angry you raise your voice in pitch as well as in volume, Drs. Grant Fairbanks and Wilbert Pronovost of the State University of Iowa have found. (*Science*, Oct. 21)

Measurements of the voices of actors portraying various emotions showed that in rage or fear the voice goes up a full octave above the pitch level for indifference, contempt or grief which are in the neighborhood of low C. The pitch range is also greatest for rage and fear, covering about two octaves while indifference covers only half that range.

A total pitch range of over three octaves was used by five out of the six actors in portraying all five emotions.

That the actors' simulations of emotions were probably close to the real thing is indicated by the fact that listeners who heard phonograph recordings of the voices named the emotions correctly in from 66 to 88 per cent. of the judgments.

Science News Letter, November 5, 1938

GENERAL SCIENCE

Boy and Girl Scientists To Be Organized in U. S.

HIGH SCHOOL science classes will have new life and meaning as the result of the formation on a nation-wide basis of science clubs for young people from 12 to 18 years old, it was announced by Robert T. Pollock, president of the American Institute of the City of New York.

This is an outgrowth of the Institute's 300 clubs with 6,000 members in New York City and vicinity, which conduct an annual Science Fair, discuss current problems at the Science Congress and write for their own journal.

Members of the new organization will be given an opportunity to conduct actual serious scientific research and will contribute to an official "science newspaper," said to be the first of its kind in the country. The organization will be known as The American Institute Science and Engineering Clubs.

Science News Letter, November 5, 1938

NE FIELDS

RADIO

Ultra High Frequency Radio Receiver Developed

DEVELOPMENT of the first ultra high frequency radio receiver capable of picking up signals ranging from 60 to 132 megacycles in frequency, of importance in connection with new and improved radio air safety aids, is announced by the Civil Aeronautics Authority.

Developed by P. D. McKeel of the Authority's radio development section, the new receiver uses sections of coaxial lines for the radio frequency and oscillator tuned circuits in place of the standard coil and condenser. It takes up a little more space than the more usual type.

No receiver covering the ultra short wave band between 60 and 132 megacycles has been available before. Commercially available sets are limited to the lower portion of the band, which includes most of the ultra short wave bands allocated to aeronautical purposes.

Science News Letter, November 5, 1938

HYGIENE

Daily Skipping Advised For Foot Strengthening

PHYSICIANS, especially those specializing in orthopedics, have talked themselves hoarse, it would seem, on the foot-deforming effects of pointed-toed, high heeled shoes. A look into the shop windows must be truly discouraging. Yet they persist in their efforts.

The essentials of a satisfactory shoe are described by one authority as follows: It must grip the heel firmly and have a bar or tie which fits over and grips the instep. The heel should not be higher than one or one and one-half inches. The fore part or vamp should be a little more anatomically correct than the foot, allowing room for the toes to move about.

Such a shoe allows the joints of the foot to move actively in stepping forward, the transverse arch can flatten and reform normally when weight is put on the foot, and the activity of the muscles is preserved.

A more psychological and possibly more successful approach to the problem of getting people to wear correct shoes is suggested by another medical man. He suggests teaching the rising generation to "admire as elegant" the anatomically perfect foot. This foot has a straight inner border and mobile arches. When such a foot becomes fashionable, it is suggested, manufacturers will make shoes to fit the feet.

Daily skipping for ten or fifteen minutes either barefoot or in "gym" shoes is suggested as a method for strengthening the growing feet of children. Both this and the suggestion for running barefoot on the grass or playground seem likely to be one of the more popular pieces of health or medical advice.

Interestingly enough, the German doctor who recommends making these exercises a regular part of the school curriculum prefers running sports to maneuvers which involve prolonged route marches and long periods of standing.

Science News Letter, November 5, 1938

MEDICINE

Brain Abscess Cured By Sulfanilamide

SULFANILAMIDE, the drug sensation of the day, has made a new conquest in the cure of brain abscess and the prevention of almost certain meningitis.

Dr. Paul C. Bucy of Chicago reports the latest spectacular usage of the new drug. (*Journal, American Medical Association* Oct. 29).

A four-year-old child treated at the University of Chicago Clinics was the patient who responded promptly to the sulfanilamide treatment when her critical condition was diagnosed as an abscess of the cerebellum.

Surgeons opened the brain and drained the pus from the abscess. The surface of the cerebellum was swarming with hemolytic streptococci and meningitis seemed inevitable.

Immediately sulfanilamide treatment was begun. In two weeks the little girl was well again.

Dr. Bucy declares that the University of Chicago Clinics in the future will treat all brain abscesses in a similar manner.

A defect will be made in the skull over the abscess, the pus sucked out and sulfanilamide treatment begun. If this suffices, nothing further will be done. If not, the abscess will be opened, evacuated and drained in the usual way.

Science News Letter, November 5, 1938

PHYSIOLOGY

Normal 18-Year-Old Girl Weighed 20 Ounces at Birth

JUST a little too long at birth to lie comfortably in an ordinary cigar box, Ruth Thomas of Le Sueur, Minn., now a college freshman, spent her infant days reposing in a shoe box.

Her mother, Mrs. Grace Thomas, believes that her 18-year-old daughter was the smallest baby ever to survive. The baby weighed 20 ounces at birth, it is claimed.

The smallest infant previously on record to survive and develop normally weighed 1 pound 5 ounces. When Mrs. Thomas read this report in the newspapers recently, she was reminded of the fact that her daughter, now an intelligent active girl, had weighed one ounce less at birth.

Dr. Swan Ericson of Le Sueur has sent to the *Journal of the American Medical Association* an affidavit from the midwife, Bridget Shea, giving the weight and details of the birth of Ruth Thomas. The attending physician has since died and his records are lost.

According to the midwife's affidavit, the child, who was born on February 24, 1920, had fingers the size of darning needles and legs no bigger than a woman's second finger.

The infant was so small that it could not be dressed for two months. It was bathed in olive oil by means of small applicators.

The tiny baby's fame spread and 1000 persons came to look at her during her first few months of life.

Dr. Ericson has interviewed the midwife, investigated the scale on which the child was said to have been weighed and finds that it is still accurate.

Science News Letter, November 5, 1938

PHYSIOLOGY

Anger or Other Emotion Shows Up in Brain Waves

WHEN you get angry or experience some other emotion, it shows up in your brain waves, the record of electrical activity in the brain, Dr. Hudson Hoagland of Clark University, Worcester, Mass., told members of the Academy of Physical Medicine.

Brain waves from normal persons, Dr. Hoagland found, do not show as much variation under emotional stimulus as brain waves of mentally sick patients. The studies suggest the emotion does not originate in the brain cortex.

Science News Letter, November 5, 1938

PUBLIC HEALTH—GENERAL SCIENCE

Dogs or Babies?

California Voters Being Asked To Choose Between Medical Progress and Antivivisection Legislation

By WATSON DAVIS

THE LIVES of millions of men, women and children now and in the years to come? Or the lives of a few dogs and other animals? Which will you save?

This question, along with the "funny money" $30 every Thursday plan and over a score of other referendum propositions, will come before California voters on Nov. 8.

The proposed antivivisection legislation, masquerading as a "humane pound law," would plunge a knife into scientific research in California universities, laboratories and other institutions. It would throttle medical inquiries into the causes and cures of disease.

It is quite possible that those who vote for this restrictive legislation will be signing their own death warrants. For in California as in other parts of the world, bands of scientists are working valiantly to conquer diseases not yet controllable or fully understood. They must have animals upon which to experiment, just as others before them have with the help of animals discovered the way to cure, control and prevent so many ills of mankind.

Loving his "man's most faithful companion," the misled or misinformed California voter for the proposed "regulation of pounds" act may very well be endangering the health of his dog. For veterinarians use scientific medicine in keeping well or curing pets and other animals.

Forced to Fight

Repeatedly in recent years the scientists, who have little enough time as it is for their investigations, have been forced to come out of their laboratories to fight for the right to continue the sort of animal experimentation that made possible modern surgery and the control of such diseases as diphtheria, smallpox, syphilis, diabetes, and other ills that once raged unchecked.

Emotional ladies, with the help of well-paid publicity experts, insistently plague legislative bodies with demands for what they call "antivivisection" legislation. Despite long campaigns they have been generally unsuccessful.

The California "humane pound" act represents a change of tactics. An attempt to mislead the public into approving antivivisection referendum legislation through an indirect attack is being made. The proposed act upon casual reading may appear to be innocuous, but lawyers find jokers in it. Anyone collecting animals for any purpose except for sale as pets becomes a "poundmaster" and any such person would be prevented from allowing any domestic animal to be used for experimental purposes. Animals for experimental or demonstration purposes would have to be bred en masse on the very premises of medical institutions. As this is quite impracticable, the effect would be to prevent animal experimentation on any useful scale. Moreover, such a law would open the way for persecution of medical institutions and scientists through a constant inquisition by the antivivisectionists.

Nationwide opposition to the proposed California legislation has developed in lay, scientific and medical circles. Leading churchmen, scientists, and others are advising the California electorate to defeat this referendum proposal as they did a similar attempt in 1922. In California the California Society for the Promotion of Medical Research in opposing the measure has the backing of foremost educators, professional and lay men and women, as well as scores of scientific societies.

The mis-named "humane pound" act is called by its opponents "an intelligence test for the people of California."

• Advice From Scientific Experts

I am convinced that it would be detrimental to medical progress, both human and veterinary, to prohibit the use of animals in legitimate experiments. On the contrary, laws should be passed which will authorize definitely the use of animals for scientific experiments by any approved research institution. — *Surgeon General Thomas Parran, U. S. Public Health Service.*

With the aid of animal experimentation modern medicine has freed man from the constant fear of pain, suffering, discase and death. Animals have benefited from such investigations as much as man himself — *Dr. Morris Fishbein, Editor, Journal of the American Medical Association.*

Further progress in the development of new methods of diagnosis and the perfection of proved methods now in use will undoubtedly be seriously impeded if research investigators are to be denied the use of animal experimentation humanely conducted.—*Dr. Olin West, Secretary, American Medical Association.*

The number of animals sacrificed for medical purposes is small in comparison with the hecatombs that are killed for food or sport or merely because they interfere with our material welfare or comfort. All legislation that is designed to obstruct the work of these serious trained scientific investigators must be counted as a disservice to the best interests of mankind.—*Dr. W. H. Howell, formerly professor of physiology, Johns Hopkins University, Vice-President and Chairman Executive Committee, Science Service.*

One single game season inflicts more suffering on our animal friends than all the experimentation that has been done upon them through all the centuries for medical purposes.—*Dr. R. A. Millikan, Nobelist in Physics; Chairman, Executive Council, California Institute of Technology.*

It would be a terrible catastrophe for the people of California should they be deceived by propaganda and vote in favor of a bill which would put an end to the valuable studies which are being pursued in the laboratories of their state for the good of both man and animal. Investigation of animals has led to saving humanity much suffering and with the defeat of the proposed law it may be expected to continue to bring increasing health and happiness to Californians and all mankind.—*Dr. George R. Minot, Nobelist in Physiology and Medicine; director, Thorndike Memorial Laboratory, Boston City Hospital.*

It would be a very evil thing to restrict the beneficent use of the lower animals for the study of diseases that affect them and mankind in the same way. I know from experience that no cruelty is inflicted on animals used in the laboratory for experiments; in fact, it would defeat the very purpose of the work to do so. I sincerely trust that no restrictive law will be passed that might interfere with further progress that means so much for the welfare of mankind.—*Dr. Thomas Hunt Morgan, Nobelist in Physiology and Medicine; Director, Kerckhoff Laboratories, California Institute of Technology.*

The antivivisectionists weigh stray dogs against babies, it is charged, and if the measure becomes law, the babies will lose. One slogan of the scientists is: "If you do not kill this measure, it may kill you!"

Hopes For Cancer Cure Depend on Use of Animals

By JANE STAFFORD

ALL over the country people are beseeching scientists to find a cure for cancer. Every parent in the land is hoping that next summer doctors can give his child something to protect him from infantile paralysis. And who that dreads the dentist's drill does not long for scientists to discover the way to cure or prevent tooth decay?

But if the people of California vote on Nov. 8 to make the proposed "regulation of pounds" proposal a law, they may be sounding the death knell for these hopes.

A telegraphic survey by Science Service shows that scientists in California are now working on the vitally important problems of cancer, leukemia, infantile paralysis, high blood pressure, heart disease, pneumonia and other lung diseases, sterility and fertility, human nutrition with all its angles and glandular disorders.

They are trying to find a non-inflammable, safe inhalation anesthetic; a non-addiction substitute for morphine; and a way to prevent and control brain convulsions, arthritis, liver disorders, amebic dysentery, leprosy, trichinosis, plague, horse "sleeping sickness," disorders of the menopause, anemia and the common cold.

All of these would be interrupted by the passage of the so-called humane pound bill.

One of California's research laboratories has come very near to giving the world a preventive of infantile paralysis. Another has found a fertility factor in food with practical applications that are being investigated in laboratories all over the country. Neither of these discoveries —protective nasal sprays for infantile paralysis and the fertility vitamin E— could have been made without the use of animals for experimental study.

Improved Insulin

A new and improved insulin to make life easier for diabetes sufferers was developed at another California research laboratory—with the aid of animals. At this same laboratory scientists found a practical way of using a gland product of the body to check growth of cancer in rats. This research is being pushed right now in the hope of extending its usefulness. The gland substance is not a cure for cancer, but the scientists are trying to find what there is about it that can affect cancer. Following this lead, they may arrive at a cancer cure or, at least, at discovery of the mechanism in the body which, when it goes wrong, paves the way for cancer to develop. But the studies cannot be made without the use of animals.

It is such studies, however, that the so-called humane pound law would seriously hamper if not stop altogether. The proposed law does not specifically prevent research, but as Dr. Loren R. Chandler, dean of Stanford University's Medical School, stated in a wire to Science Service, it "would seriously interfere with all medical research and prevent much."

Research is not the only life-saving, health-preserving activity that will be hampered by passage of this proposed law. Animals are used routinely in laboratories that make tests to diagnose certain diseases.

Needed For Tests

Syphilis cannot be eradicated, as everyone now hopes it will be, without tests to diagnose early, infectious cases. And the Wassermann test for syphilis cannot be made without animals. In medico-legal cases animals are often needed to settle questions of poisoning. They are needed for tuberculosis tests and for tests to determine pregnancy early.

The proposed law might also hamper the activities of laboratories that make vaccines and serum to protect against disease. California has several such laboratories, and they all need animals to use in testing their products before they are known to be safe for use on humans.

Demands for medical care regardless of ability to pay are now widespread and vociferous. But a demand for a measure to limit use of animals for medical research is a demand to choke medical care at its roots in the research and medical school laboratories.

Science News Letter, November 5, 1938

On Proposed California Law •

No intelligent thoughtful person can even by the greatest stretch of imagination believe that this law has been drafted by humane, sane thinking persons in the interest of humanity to man's best friend, the dog. Obviously the brain child of propagandists or of persons unfamiliar with the great discoveries in medicine which have been possible only through the use of, but not abuse of, animals in the laboratory, it offers no rational or actual protection for the dog but presents a most effective hindrance to further protection from disease of every helpless child as well as his mother and father in the State and perhaps every State in the union.—*Dr. William P. Murphy, Nobelist in Physiology and Medicine; Harvard Medical School.*

The anemia work to learn how the body can build new blood hemoglobin was begun in San Francisco at the University of California in 1914. In all this work during the next ten years and subsequently dogs have proven to be the most useful and reliable experimental animal. The work could not have been done on other animals.—*Dr. George H. Whipple, Nobelist in Physiology and Medicine; Dean, School of Medicine and Dentistry, Rochester University.*

It would be most unfortunate if California should pass the humane pound law limiting useful animal experimentation which has been so effective in advancing our ability to combat disease not only in humans but also in the animals which this law aims to protect. Sentimentality should not be allowed to defeat the true humanitarian aims of science.—*Dr. John P. Peters, Yale University School of Medicine, secretary of the Committee of Physicians for the Improvement of Medical Care.*

The basis of advance in medicine and surgery is animal experimentation. The routine control of many diseases likewise requires the use of animals as test objects. Legislative actions that tend to restrict such experimentation under properly controlled auspices are against sound public policy and tend to increase of human suffering and of the death rate itself—*Dr. Frank R. Lillie, President, National Academy of Sciences; Emeritus Professor of Embryology, University of Chicago.*

This measure says in effect the leaders in medical education and medical research in the State of California can not be trusted to treat unclaimed stray dogs and cats humanely.—*Dr. A. J. Carlson, Professor of Physiology, University of Chicago.*

Scientific gains made possible through laboratory use of animals result in the saving of hundreds of thousands of lives annually in the United States, have made possible such medical advances as the "iron lung," insulin, present-day anti-toxins and vaccines, have led to the control of cholera. yellow fever, typhoid fever, and are today opening the way to national control of syphilis.—*Dr. Elliott C. Cutler, Chairman of the American Medical Association's Committee for the Protection of Medical Research.*

Science News Letter, November 5, 1938

TRACING HER ANCESTRY

The stuffed figure of Su-Lin, giant panda, looks on as Paul McGrew shows Henry W. Nichols, chief curator of geology at Field Museum of National History, a fragment of a fossil animal's jaw bone and teeth which he discovered in Nebraska. The fossil is believed to be a 20,000,000-year-old ancestor of Su-Lin.

PUBLIC HEALTH

Preventing Tooth Decay Is the Job of the Patient

Public Health Association Hears Reports of Fight Against Venereal Diseases; State Has Birth Control

EACH person who wants to keep his teeth from decaying must do the job himself. He cannot depend on his dentist for this, Dr. Nina Simmonds, nutrition authority of the University of California's School of Dentistry, declared at the meeting of the American Public Health Association in Kansas City.

Eat just as few sweets as you can and get as many vitamins, especially the sunshine-vitamin D, as possible. This sums up the rest of Dr. Simmonds' practical advice to those who want to avoid tooth decay or caries, and explains why the job of caries prevention is so largely an individual one. If it is to be done by eating the right foods, or not eating the wrong ones, obviously each person must do it for himself, and parents must do it for their children.

The role of cleanliness in caries prevention Dr. Simmonds dismissed by saying that "the use of the tooth brush in personal hygiene is an accepted practice." She also pointed out that many members of primitive races and also numerous persons living under civilized conditions often escape tooth decay even though their mouths and teeth are not kept clean. Observations have shown, however, that these persons also do not eat sweets, and when they change their diet they are likely to get decayed teeth.

Cutting down on sweets, Dr. Simmonds explained, cuts down the number of acid-forming germs in the mouth. It is the acid formed by these germs that destroys the enamel of the teeth and gives caries its start. She cited many experiments by different scientists which all showed a relation between sweet foods and caries. Other factors enter into the situation, but the dietary one seems to be most important.

The cause of tooth decay is "an exceedingly complex problem," Dr. Simmonds pointed out, but she believes that further research will solve this problem as it has such others as rickets, scurvy, beri-beri and pellagra.

Sources of Syphilis

ERADICATION of syphilis in the nation can be hastened by locating and examining contacts of known syphilis patients, it appears from the report of Drs. T. B. Turner of the Rockefeller Foundation, A. Gelperin of the Cincinnati Health Department, and J. R. Enright of Hawaii's bureau of venereal disease.

Working in the syphilis department of the Johns Hopkins Medical School and Hospital, these investigators found that for every 100 patients coming for treatment, 30 more infectious syphilis patients could be located by contact investigation. If these patients had not been discovered and treated, not only would their health have suffered but they would probably have spread the infection still further.

It cost $10 to bring in for medical care each previously unrecognized case of syphilis, and about $18 for each infectious case. The results achieved were, in the opinion of Dr. Turner and associates, well worth the cost.

Second Venereal Disease

AN attack on gonorrhea similar to the nation-wide fight to wipe out syphilis should be started at once, said Dr. Walter Clarke, executive director of the American Social Hygiene Association.

Gonorrhea, like syphilis, is an ailment that formerly was not mentioned in polite society. Like syphilis, it causes a vast amount of suffering, disability and childlessness. It is even more common than syphilis. Dr. Clarke said that gonorrhea is more prevalent than any ailment except the common cold.

Three potent weapons for fighting gonorrhea have recently been developed and because these weapons exist, Dr. Clarke believes the time has come to start serious plans for a public health attack on this disease.

One of the weapons is a female sex hormone which, he declared, cures gonorrhea in little girls in 63 per cent. of the cases in 150 days. The efficacy of this treatment was discovered by Dr. Robert Lewis of Yale.

Second weapon against the disease is the modern counterpart of the sweat house treatment used by the Indians when they first contracted gonorrhea from white people.

Modern physicians use malaria, radiant heat, and high-frequency radio waves to produce high fever to cure gonorrhea. Many investigators have devised

various methods of inducing fever. One of the most scientific, Dr. Clarke said, is that in which tests are made to determine how long it takes to kill the germs in each case at a temperature of 106.7 degrees Fahrenheit. The patient is then given fever treatment for the time indicated as necessary to kill his particular germs.

Third weapon against gonorrhea is sulfanilamide, the new chemical remedy which is conquering a great number of other infectious ailments. For best results with this treatment, the patients should be in bed in the hospital. Under these conditions, over three-fourths of acute cases and almost 100 per cent. of the chronic cases have been apparently cured. Results when the patients are not in bed are not so good. Only about one-half the patients were cured under these circumstances.

Dogs Are Fever Drag Nets

Dogs probably play a more important part in spreading deadly Rocky Mountain spotted fever than is generally recognized. Dr. Carl F. Jordan of the Iowa State Department of Health reported that dogs were implicated as having spread the ailment in over one-third of the cases recently reported in Iowa.

The germ or virus of the disease is carried in the bodies of ticks, but dogs carry the ticks, Dr. Jordan pointed out.

"Dogs serve as a drag net in gathering ticks from surrounding territory and bringing them close to children and adults in the home," Dr. Jordan said. "As an example, in an Indian home in which two children developed spotted fever, ticks numbering 275 were taken from four dogs belonging to the family."

Dogs themselves are susceptible to the virus or germ of the disease, recent experiments show.

Persons who live in or frequent rural areas, Dr. Jordan warned, should be "tick conscious" during the tick season.

Sickness Among Children

MORE than 100,000 cases of disabling illness occurred in one year among a little over half a million of the nation's children, George St. J. Perrott and Dorothy F. Holland of the U. S. Public Health Service reported.

These figures, obtained in the National Health Survey, show that the sickness rate among children under 15 years is 32 per cent. higher than the sickness rate for all ages.

Four out of every five disabling illnesses among children under 15 years of age were included in the group of acute infectious diseases and respiratory diseases. Of the acute infectious diseases, measles, chicken-pox, whooping cough, mumps, and scarlet fever were most frequently reported. Tonsillitis, influenza, colds, pneumonia and bronchitis, in that order, were the most frequent respiratory diseases.

Malaria takes its toll of child health in the South, accounting for four-fifths of all disabling illness among children under 15 years due to the infectious and parasitic diseases.

Both high and low income families failed in a large number of cases to call a doctor when a child had one of the acute infectious or respiratory illnesses, except tonsillitis and pneumonia. Upper income families, when they did call a doctor, however, provided more intensive medical care for all diseases of childhood than the families in low income groups who had medical attention for sick children.

Children in small cities received less medical care for their illnesses than those in large metropolitan centers. In the South, sick negro children received notably less medical care than sick white children.

Parents need to be educated to the importance of medical care of children, the federal health workers concluded from the survey.

Whooping Cough Vaccine

VACCINATION against whooping cough, dangerous as well as trying childhood disease, got a good rating in a report by Dr. Pearl Kendrick of the Michigan State Department of Health and Dr. Anthony K. Borowski of Mount Clemens, Mich.

The number of cases that developed in 1,815 vaccinated children was 52, whereas, there were 348 cases among 2,397 unvaccinated children. When vaccinated children did get whooping cough they had less severe attacks than the unvaccinated children.

Birth Control Program

NORTH Carolina is the first state in the nation to have a birth control program sponsored by the state health department. The success of the program during its first 18 months of existence was reported by Dr. J. W. R. Norton of the state board of health.

Nearly half the counties of the state now have birth control clinics, Dr. Norton reported. There has been no local opposition to the service or the method adopted for rendering it. Social, religious and other civic leaders have given their full endorsement and cooperation.

The patients have been selected from poor married women who need to limit the size of their families or space their children for the sake of their own and the children's health. Women who are able to pay a private physician are encouraged to do so. Practising physicians in the communities served have been glad to find that they may legally give this service to their private patients.

A total of 1,141 patients has been served, with only 6 failures reported. In three of these the mentality of the woman was very low.

Science News Letter, November 5, 1938

PHYSICS

Earth's Magnetism Is Still Mystery

THE MYSTERY of magnetism has been puzzling the best minds of the world ever since that unrecorded day when man first picked up a natural lodestone and found that it strangely attracted bits of iron to it.

For thousands of years only a curiosity, the lodestone was finally discovered —probably in China—to have the additional power of indicating north if it was suspended on a string. The earth itself was later found to be a giant magnet.

Through the ages man's uses of magnetism have increased to all the ramifications which make possible today's present electrical era; for magnetism and electricity were found to be closely related. But ever the mystery of the potent power of earth magnetism was present, and only partially explained.

Seeking some answer to the riddle scientists, the world over, have probed deeper and deeper into matter and into smaller and smaller chunks of matter

until they were studying the magnetism present in the atoms themselves.

But let Dr. M. A. Tuve of Carnegie Institution of Washington tell the story as he does in Scientific Monthly. ". . . there is one really outstanding puzzle which all our knowledge of physics is still unable to explain, namely, the enormous permanent magnetic field of the earth . . . We now have measured the deepest forces within the atom, we have, so to speak, chased magnetism all the way down to the smallest particles inside the atom, but we still have no clue to why the earth and the sun have such large magnetic fields, each related to their direction of rotation."

Dr. Tuve is referring to studies measuring the fundamental force which is found in the nucleus of atoms and which binds them together. The discovery of this attractive force has been one of science's outstanding finds of recent years.

Science News Letter, November 5, 1938

PALEONTOLOGY

Third Java Ape-Man Skull Resembles Peking Man

A NEW-FOUND skullcap of Pithecanthropus, ancient ape-man of Java, is unique in showing a marked resemblance to the skulls of the Peking race found in caves in northern China. This resemblance consists in a noticeable arching or doming of the top of the skull, which is not present in the two previously known Pithecanthropus skulls, one discovered in 1937 and the other in 1891.

The new find is described (*Nature*, Oct. 15) by Dr. G. H. R. von Koenigswald, who works under the auspices of the Carnegie Institution of Washington, and Dr. Franz Weidenreich of Peiping Union Medical College, leader of researches at the Choukoutien caves where remains of Peking man are found.

The third Pithecanthropus skull, like its two predecessors, is a large fragment. It consists of the complete right parietal bone, which makes up most of the side of the skull, with part of the left parietal and a piece of the occipital bone, which forms the back of the skull.

The fragment exhibits a crest along the top, together with a depression on the side, which the two researchers state "entirely correspond to those which are characteristic of the Sinanthropus skulls. The pronounced flattening of the cap, so specific for the two Pithecanthropus skulls known hitherto, is completely missing in the case of this new Pithecanthropus skull."

On the other hand, they point out, the new skull has certain features in common with both Java and Peking skulls, especially in a general lowness of the entire cap as compared with the higher doming in skulls of modern man, and in having its greatest width at the sides of the face just forward of the ears, instead of much higher up as in present-day races.

The condition of the sutures or seams between the bones indicates that the skull is that of a juvenile individual.

"All the new Pithecanthropus finds," the investigators remark in concluding, "demonstrate how important and promising it is to search for fossil man in Java."

Science News Letter, November 5, 1938

MEDICINE

One of World's Worst Pains Relieved by Vitamin B Doses

RELIEF for sufferers from tic douloureux, a facial neuralgia so painful that some victims commit suicide, has been obtained by massive doses of vitamin B administered by a clinic conducted at California Institute of Technology.

Of 12 cases just reported to the medical profession, eight are free from pain and four are so free that the pain bothers the victims very little. The research is being conducted by Dr. Henry Borsook, biochemist, Dr. C. G. Wiggins, oral surgeon, and Dr. M. Y. Kremers, physician.

Ten times the amount of vitamin B required by a normal person is administered by mouth and by injection. In a month patients begin to feel relief from pains. In another month, there is marked freedom from pain. Some who have suffered shooting pains for 20 years obtain relief for the first time.

This nerve disease, one of the most painful ills affecting mankind, previously was curable only by brain surgery, with alcohol injection of the nerve the only palliative.

One of the present patients of the clinic was on the verge of ending her life when she was picked up by the police. Detective William Cropsey of Pasadena realized that the pain shooting through her face might be relieved at Caltech. He took her to the clinic and now she is enjoying more freedom from pain than she has known in years.

The clinic started in April when a sufferer from this spasmodic trigeminal neuralgia walked into the Institute's Kerckhoff laboratory and inquired if vitamin B treatments would cure the disease. Dr. Borsook, who in previous experiments had achieved good results in relieving neuritis, started this new research, using highly concentrated vitamins.

Investigators Cautious

While astonishing results have been obtained, the medical men are not certain yet that the result will be permanent. However, they have no reason to be pessimistic. At the outset, they did not expect to secure any results for six months or a year. They were agreeably surprised in getting noticeable improvement in a month.

The patients, ranging in age from 21 to 79, with the majority over 45 years, visit Caltech each day for treatment and all come together once a week at a clinic. Treatment is free with Caltech defraying the expense.

The experiments enable observers to make an excellent study of the physiology of pain.

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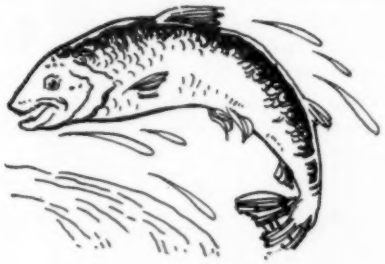
FISHERIES

NATURE RAMBLINGS
by Frank Thone



Silt and Salmon

SILT washed down from placer gold mining operations is declared not guilty of killing salmon in the Rogue River, famous fishing stream of Oregon, by Dr. Henry Baldwin Ward, emeritus professor of zoology at the University of Illinois, who made a special study of the situation for the Oregon State Department of Geology and Mineral Resources. Dr. Ward's results have been published in a special bulletin.

Resumption of placer gold mining in Oregon after the industry had been dormant for a number of years made the question a live issue between the mining interests and the conservation, sporting and fisheries people. In placer mining, the gold-bearing gravels are washed out of hillsides by powerful jets of water, and the waste material is poured into the river, making it very roily and turbid. It was feared that fish could not thrive in the muddy water.

Dr. Ward approached the problem rather inclined to accept this point of view, he informed Science Service. However, his observations convinced him that the muddiness was doing the salmon no particular harm.

Placer mining waste, Dr. Ward points out, is not the same as pollution. It does not add any toxic substance to the water, and it does not introduce organic materials that adsorb oxygen from the water and so cause the fish to suffocate. It consists of the same soil materials that are introduced into the stream by natural erosion processes, producing conditions of turbidity in the water to which they have been accustomed for ages. The only differences are in quantity and season.

The red-colored sediment in the Rogue River may even serve as a protection to the salmon, Dr. Ward suggests. "It may contribute to the opacity of the water," he says, "and perhaps also makes it difficult for the fish to see the fly. . . . If the fish cannot see or are not attracted by the caster's lures, the condition of the water may reasonably be said to protect the fish, even though it disappoints the fisherman!"

Additional support for Dr. Ward's views is found in results of laboratory experiments at Reed College, performed at his suggestion by Dr. L. E. Griffin, who kept fingerling salmon and trout in tanks of muddy water. It was found that they got on just as well, on the whole, as control groups kept in clear water.

Other things, however, that are being done and proposed for this river will not be so harmless to the salmon population, in Dr. Ward's opinion. Diversion ditches, drawing off water for irrigation and industrial uses, tempt the fish out of the main stream, to perish miserably in the fields or be cut to pieces in turbines. Sewage and organic wastes from mills and factories greedily absorb the dissolved oxygen from the water and the fish suffocate.

Particularly evil, Dr. Ward holds, are the effects of dams. Salmon insist on ascending to the headwaters of streams to spawn, and although fish ladders are usually built so that they may pass the dams the fish do not always use them. They seek the coldest flowing water, and if this comes from the tailrace of the turbines or through leaks in the dam, they will forsake the ladders and spend their vitality in vain attempts to ascend by these impossible routes.

Science News Letter, November 5, 1938

PSYCHOLOGY

Our Love for Music Is Explained by Psychologist

LOVE for music can be explained by the psychologist. Dr. Carl E. Seashore of the University of Iowa, who as psychologist has for years been studying and predicting musical ability and appreciation, scouts the idea that love for music is an inexplicable emotion.

Love of music can be accounted for on five grounds, he writes, in the *Music Educators Journal*.

The first reason is physiological. We have an organism that registers music and responds to it somewhat like a resonator. Not only the central nervous system is affected, but the peripheral nervous system, all the muscles, all the internal organs, and especially the autonomic system with its endocrines which furnishes a physical basis for emotion. The whole body is put into a glow of well-being by the pleasure of hearing musical sounds.

A single sound may be beautiful in itself, like a flower or a human face, Dr. Seashore emphasizes. The untutored mind and the musically trained can alike delight in their charm quite apart from their utility in musical structure.

Delight in "harmonic structure, the melodic progressions, the rhythmic patterns, the qualitative modulations, in the flow of beautiful sounds" is another reason for love of music.

We love music also because it is the language of social bonds. Music is a message and can move the social group into concerted action and into a feeling of common fellowship.

Finally we love music because it is a means of self-expression. It furnishes us with the joy of putting into a fitting medium our love, our fears, our sympathy, our feelings of fellowship, our communion with the Divine.

On these five fundamental grounds, says Dr. Seashore, rests the psychologist's adequate explanation for love of music.

Science News Letter, November 5, 1938

PHYSIOLOGY

Girls Have More Toothache; Get Their Teeth Earlier

GIRLS have more toothache, probably, and certainly more decay, fillings and missing teeth than boys of the same age. But it is not the girls' fault. They just get their teeth earlier than boys, so they have a longer exposure to caries, scientific term for tooth decay.

The girls are not any more susceptible to caries, Drs. Henry Klein and Carroll E. Palmer, U. S. Public Health Service, conclude after surveying the tooth situation among nearly 5,000 boys and girls in the elementary schools of Hagerstown, Md.

Science News Letter, November 5, 1938

•First Glances at New Books

Population—Economics

OUR PROMISED LAND—Richard Neuberger—*Macmillan,* 398 p., $3. The story of the Great Northwest today, where Bonneville Dam and Grand Coulee Dam are remaking the face of the land. Primarily, the recent economic, political and social history of the last great region in the continental United States toward which pioneering people are coming in a steady stream.

Science News Letter, November 5, 1938

Chemistry

A COURSE OF STUDY IN CHEMICAL PRINCIPLES (2nd ed.)—Arthur A. Noyes and Miles S. Sherrill—*Macmillan,* 554 p., $5. An advanced chemistry text dealing with the laws and theories of chemistry from a quantitative standpoint. The book is designed for advanced undergraduate students and also for use in graduate schools.

Science News Letter, November 5, 1938

General Science

PROCEEDINGS OF THE INDIANA ACADEMY OF SCIENCE, VOL. 47—Paul Weatherwax, ed.—*Indiana Academy of Science,* 324 p., $3.

Science News Letter, November 5, 1938

Botany

ALGAE: THE GRASS OF MANY WATERS—Lewis Hanford Tiffany—*Thomas,* 171 p., illus., $3.50. See page 291.

Science News Letter, November 5, 1938

Horticulture

PLANTS FOR THE CONNOISSEUR—Thomas Hay—*Macmillan,* 180 p., illus., $3. This book is botanically authoritative, but it is designed primarily for the critical lover of flowers. The species, listed in alphabetical order, are chosen primarily on the basis of uniqueness and beauty. The halftone illustrations, all full-page, are for the most part excellent.

Science News Letter, November 5, 1938

Physics

MAGNETISM AND ELECTRICITY—A. E. E. McKenzie—*Cambridge (Macmillan),* 379 p., $1.75. A British text meeting the requirements of school certificates. The book is a learning rather than a teaching manual.

Science News Letter, November 5, 1938

Agriculture

TO HOLD THIS SOIL—Russell Lord—*Govt. Print. Off.,* 123 p., illus., 45 c. U. S. Dept. of Agr., Misc. Pub. 321. This is a beautiful book, and a terrible one. Beautiful in the way it blends text and illustration to tell the story of soil erosion, terrible in its quiet, unimpassioned indictment of us as a people for the wasting of our heritage. Yet it tastes of Isaiah rather than of Jeremiah, for it tells us that there is yet time for amendment, and it shows how this may be begun.

Science News Letter, November 5, 1938

Invention

MARCH OF THE IRON MEN: A SOCIAL HISTORY OF UNION THROUGH INVENTION—Roger Burlingame—*Scribner's,* 500 p., illus., $3.75. The United States today rests upon a structure whose base is invention and scientific research. Mr. Burlingame tells American history by tracing the significance of invention.

Science News Letter, November 5, 1938

Agriculture

COMMERCIAL FERTILIZERS (2d ed.)—Gilbeart H. Collings—*Blakiston's,* 456 p., $4. Four years have elapsed since the first edition of this useful reference book appeared, so the preparation of a new edition is timely.

Science News Letter, November 5, 1938

Chemistry

MODERN ASPECTS OF INORGANIC CHEMISTRY—H. J. Emeléus and J. S. Anderson—*Van Nostrand,* 536 p., $9. A new text of British origin for graduate students in chemistry. The first chapter opening with atomic structure instead of the classical approach to organic chemistry, keynotes this complete work.

Science News Letter, November 5, 1938

Malacology

HANDBOOK FOR SHELL COLLECTORS (New ed.)—Walter F. Webb—*Pub. by Author, Rochester, N. Y.,* 291 p., illus., $2.50. This book is exactly what it professes to be, a collector's manual, with no pretense at zoological content. One thing which beginners especially will appreciate is the fair market price given with each species.

Science News Letter, November 5, 1938

Natural History

WAYS OF THE VELD DWELLERS—H. W. D. Longden—*Warne,* 137 p., illus., $2. Of animal books there are already plenty and of their making there seems to be no end. Yet here is an animal book that is a real novelty, for it tells of the lives of creatures (including men) in far-off South Africa—tells them in vivid, dramatic narrative form that will make it hard for any reader to put the book down unfinished.

Science News Letter, November 5, 1938

General Science

THE AUSTRALIAN JOURNAL OF SCIENCE—*Australian National Research Council, Sydney, Australia,* 2 shillings per copy; 12 shillings per year. A new bi-monthly issued by the Australian National Research Council under the auspices of the Australian and New Zealand Association for the Advancement of Science. It gives a record of scientific progress in those countries.

Science News Letter, November 5, 1938

Agriculture

PROPAGATION OF PLANTS—M. G. Kains and L. M. McQuesten—*Orange Judd,* 555 p., $3.50. A book for the professional nurseryman and greenhouseman, but suitable also for the use of the serious amateur. Working methods are told in great detail, with plenty of pictures to make doubly sure you get it right.

Science News Letter, November 5, 1938

Technology

MODERN PLASTICS, Catalogue, Directory, October, 1938—*Modern Plastics,* 304 p., $2. Sources of plastic products and the properties of these plastics.

Science News Letter, November 5, 1938

General Science

HANDBOOK FOR TEACHERS OF ELEMENTARY SCIENCE—Jack Hudspeth and Frances H. Hudspeth—*Steck,* 76 p., illus., 50 c. The place of science in school, even in the elementary grades, is now uncontested. Practical problems remain, however, on such things as fitting it into crowded curricula, method of presentation, cost of textbooks, etc. The present series, of which a text for one grade, its accompanying teacher's manual, and a general handbook are in hand, represents a thoughtful effort by a pair of experienced teachers to solve some of these problems. With condensed textual presentation and clear illustrations they give information, and then test it with searching questions. In the handbooks are many valuable suggestions for the teacher.

Science News Letter, November 5, 1938

General Science

ELEMENTARY SCIENCE. BOOK 6—Jack Hudspeth and Frances H. Hudspeth—*Steck,* 120 p., illus., 35 c.

Science News Letter, November 5, 1938

General Science

TEACHER'S MANUAL FOR ELEMENTARY SCIENCE. BOOK 6—Jack Hudspeth and Frances H. Hudspeth—*Steck,* 40 p. 35 c.

Science News Letter, November 5, 1938